

DECEMBER 1975

CENTER FOR DISEASE CONTROL

# NUTRITION SURVEILLANCE

## TABLE OF CONTENTS

### I. NUTRITION INDICES BY STATE

### II. SPECIAL REPORTS

Montana Nutrition Surveillance

Nepal Nutrition Status Survey

Comparison of Physical Size of Canadian  
and American Children

RECEIVED  
OCT 29 1976  
CDC LIBRARY  
ATLANTA GA 30333

U.S. DEPARTMENT OF  
HEALTH, EDUCATION, AND WELFARE

PUBLIC HEALTH SERVICE

DECEMBER 1974

UNITED STATES DEPARTMENT OF HEALTH, EDUCATION AND WELFARE  
CENTERS FOR DISEASE CONTROL AND PREVENTION

NUTRITION

PREFACE

This report summarizes information, including selected indices of nutrition status, received from the five participating States which comprise the initial group of contributors to a developing program of nutrition surveillance in the United States. We will consider adding other indices as their utility and availability become evident. To the extent possible, tabulations in subsequent issues will be presented in the same format unless experience indicates a change is appropriate.

The data presented in these tabulations come from a variety of sources including health department clinics, WIC screening, Headstart programs, and other health care situations. Because of the lack of uniformity of data sources, as well as methodology, direct comparisons among States should be made with caution.

TABLE OF CONTENTS

I. NUTRITION INDICES BY STATE

II. SPECIAL REPORTS

III. Nutrition Surveillance

IV. Local Nutrition Status Survey

V. Comparison of Physical Size of Canadian and American Children

Contributions to the Nutrition Surveillance Report are welcome. Please submit to:

Center for Disease Control  
Attention: Preventable Diseases and  
Nutrition Activity  
Atlanta, Georgia 30333

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE  
CENTERS FOR DISEASE CONTROL AND PREVENTION  
PUBLIC HEALTH SERVICE

Center for Disease Control. . . . . David J. Sencer, M. D.  
Director

## NUTRITION INDICES BY STATE

Data presented in Tables 1-3 represent children examined at various public health clinics during the fourth quarter of 1975. They reflect initial clinic visits only and do not show either the nutritional status of the general population or the results of nutrition intervention in the surveillance population.

Table 1 shows that anemia continues to have a high prevalence, as measured by hemoglobin in Kentucky and Louisiana, and as measured by hematocrit in these States and in Tennessee as well. In general most of the hemoglobin and hematocrit data are derived from different individuals except in Arizona where many children have both determinations. Here the prevalence of nutritional anemias is considerably lower during this quarter than for previous quarters.

Stunting, as measured by the percentage of children whose height-for-age values fall below the 5th percentile, continues to have a high prevalence in Arizona. Kentucky, which previously had high prevalences, has the lowest prevalence of stunting for this quarter.

The prevalence of low weight for height values continues to fall within the expected five percent level. The prevalence of overweight, as measured by the percentage of children above the 95th percentile of weight-for-height, is about three times the expected level in Arizona, and about twice the expected level in the other four States.

Table 2 demonstrates that Blacks of both sexes continue to have the highest prevalence of anemia as measured by hemoglobin and hematocrit. American Indians, as in previous quarters, have a relatively low prevalence of anemia. A high prevalence of stunting and of overweight continues to be seen in Spanish-Americans and American Indians. Small numbers make the prevalence rates less reliable in these ethnic groups, however.

Table 3 shows that both girls and boys under 2 years of age have the lowest prevalence of anemia by both determinations and the highest prevalence of both stunting and overweight. Conversely, 6 to 10-year-old children continue to have the highest prevalence of anemia and the lowest prevalence of stunting and overweight.

Data presented in Tables 4, 5a & b, and 6a & b represent all children examined on initial visits during calendar years 1974 and 1975. The numbers in these 2-year summaries are higher than the combined numbers presented by individual quarters in earlier issues of Nutrition Surveillance, because additional data have been reported from the States subsequent to publication of these prior Bulletins. The data are presented by four half-year periods to give an indication of time trends and by total values for the entire 2-year period.

Table 4 shows anemia to be most prevalent by hemoglobin determination in Louisiana and by hematocrit in Kentucky and Tennessee. Stunting as well as overweight is most prevalent in Arizona. The prevalence of stunting and overweight has progressively decreased over the 2-year period in all States combined and particularly in Kentucky. Stunting and overweight are least prevalent in Louisiana and Tennessee. The overall prevalence of low weight-for-height is exactly five percent with relatively little variance.

Tables 5a & b, because of large numbers in the 2-year totals, provide firm prevalence rates for Spanish-Americans and American Indians as well as for Blacks and Whites. After Blacks, anemia is next most prevalent (as measured by hemoglobin) in Spanish-Americans of both sexes; it is least prevalent, by both determinations, in American Indians of both sexes. The prevalence of stunting and overweight is lower in Blacks and Whites than in Spanish-Americans and American Indians.

Tables 6a & b show that in children under 2 years of age, anemia, by both determinations, is least prevalent, while stunting and overweight are most prevalent. In children from 6 to 13 years the converse is seen: anemia is most prevalent with stunting and overweight least prevalent. In children under age 10, stunting and overweight have become somewhat less prevalent over this 2-year period.

Table 1

Nutrition Indices by State, October-December 1975  
Persons Less than 18 Years of Age

State	Hemoglobin		Hematocrit		Height For Age		Weight For Age		Weight For Height		
	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High
Arizona	1,721	11.2	1,678	8.3	3,999	17.2	3,969	9.6	3,895	5.2	14.9
Kentucky	1,064	14.1	1,971	20.3	4,165	10.4	4,178	6.2	4,106	4.6	10.0
Louisiana	2,729	18.0	929	17.8	4,069	10.9	4,134	7.1	4,030	5.0	9.0
Tennessee	352	8.2	4,004	19.9	5,330	11.4	5,397	6.1	5,170	4.6	10.3
Washington	223	7.6	1,942	12.9	2,921	12.2	2,923	6.3	2,901	3.4	10.7
Total*	6,089	14.5	10,524	16.7	20,484	12.3	20,601	7.0	20,102	4.6	10.9

\*Totals for hemoglobin and hematocrit include unknown sex.

Table 2

Nutrition Indices by Sex and Ethnic Group, October-December 1975  
Persons Less than 18 Years of Age

Sex and Ethnic Group	Hemoglobin		Hematocrit		Height For Age		Weight For Age		Weight For Height		
	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High
<b>Male</b>											
Black	1,397	17.3	921	20.5	2,688	12.6	2,718	7.4	2,653	5.0	10.3
White	1,052	11.7	3,437	16.9	5,645	12.0	5,690	6.9	5,559	4.6	10.4
Sp. American	434	13.4	369	13.3	954	16.2	957	8.0	942	4.8	15.5
Am. Indian	71	7.0	366	9.3	730	19.9	715	11.0	708	5.2	14.3
Oriental	5	0.0	15	13.3	25	36.0	25	24.0	24	8.3	8.3
Other	11	18.2	17	0.0	36	16.7	36	16.7	36	2.8	8.3
Unknown	32	9.4	141	14.9	193	8.8	195	7.2	191	8.4	9.4
Total	3,002	14.4	5,266	16.6	10,271	13.1	10,336	7.5	10,113	4.8	11.1
<b>Female</b>											
Black	1,418	17.7	1,035	20.7	2,754	10.3	2,786	6.4	2,709	4.8	10.6
White	1,127	12.2	3,333	17.1	5,662	11.2	5,704	6.3	5,525	4.2	9.8
Sp. American	401	12.7	319	11.3	855	12.2	857	6.2	846	4.4	13.7
Am. Indian	96	4.2	392	7.7	739	17.1	714	8.5	708	5.4	16.2
Oriental	8	0.0	20	5.0	36	22.2	36	8.3	35	0.0	8.6
Other	6	33.3	13	23.1	25	20.0	25	16.0	25	0.0	16.0
Unknown	25	12.0	101	15.8	142	13.4	143	6.3	141	2.8	9.2
Total	3,081	14.6	5,213	16.7	10,213	11.6	10,265	6.5	9,989	4.4	10.8

Table 3

Nutrition Indices by Sex and Age, October-December 1975  
Persons Less than 18 Years of Age

Sex and Age Group	<u>Hemoglobin</u>		<u>Hematocrit</u>		<u>Height For Age</u>		<u>Weight For Age</u>		<u>Weight For Height</u>		
	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High
<b>Male</b>											
<1	293	9.2	638	7.8	3,637	17.3	3,662	10.1	3,535	5.1	13.6
1	490	12.4	897	9.0	1,203	16.0	1,223	6.9	1,194	5.2	17.6
2-5	1,021	12.9	2,065	17.6	2,732	10.7	2,745	5.3	2,709	4.2	8.7
6-9	382	23.0	789	29.4	1,093	7.0	1,093	4.8	1,083	5.2	7.1
10-12	360	14.4	425	18.8	727	8.0	729	7.1	722	6.8	7.6
13-17	456	15.8	452	15.3	879	11.0	884	8.5	870	3.0	7.1
Total	3,002	14.4	5,266	16.6	10,271	13.1	10,336	7.5	10,113	4.8	11.1
<b>Female</b>											
<1	340	6.8	584	7.5	3,523	13.8	3,537	7.7	3,397	4.8	13.8
1	415	9.9	759	10.3	1,037	17.3	1,055	5.6	1,028	3.5	14.4
2-5	1,017	13.5	2,003	17.0	2,676	10.6	2,688	5.3	2,659	3.0	8.8
6-9	409	22.2	782	29.5	1,123	6.4	1,124	5.2	1,111	6.8	6.5
10-12	346	15.3	467	18.2	765	8.2	766	7.8	760	7.1	7.6
13-17	554	18.8	618	15.0	1,089	8.9	1,095	6.9	1,034	3.1	9.3
Total	3,081	14.6	5,213	16.7	10,213	11.6	10,265	6.5	9,989	4.4	10.8

Table 4

Nutrition Indices by State, January 1974 - December 1975  
Persons Less than 18 Years of Age

STATE	Date	Hemoglobin		Hematocrit		Height For Age		Weight For Age		Weight For Height			
		No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High	
<u>Arizona</u>													
	1974	(1st	4,237	16.4	2,761	14.2	6,188	15.5	6,232	8.9	6,004	5.5	14.9
		(2nd	2,906	17.9	2,383	11.3	4,712	16.7	4,643	9.9	4,400	6.7	16.9
	1975	(1st	4,150	13.8	7,462	12.1	12,945	17.3	12,916	8.1	12,612	4.9	15.6
		(2nd	3,356	12.3	3,143	11.4	7,189	16.3	7,144	9.7	7,013	5.8	12.7
	Total		14,649	15.0	15,749	12.2	31,034	16.6	30,935	8.9	30,029	5.5	15.0
<u>Kentucky</u>													
	1974	(1st	5,180	15.4	5,542	22.0	11,653	14.6	11,456	7.1	11,245	6.4	13.6
		(2nd	2,671	18.7	1,929	24.7	6,135	14.1	6,137	8.1	5,996	6.7	11.5
	1975	(1st	2,036	18.2	2,445	17.7	6,461	13.4	6,474	7.7	6,322	6.0	12.2
		(2nd	2,736	14.8	3,687	19.0	8,452	10.2	8,486	6.6	8,314	5.0	8.9
	Total		12,623	16.4	13,603	20.8	32,701	13.1	32,553	7.3	31,877	6.0	11.7
<u>Louisiana</u>													
	1974	(1st	240	26.7	22	50.0	269	8.6	271	5.5	265	6.8	10.6
		(2nd	1,617	19.9	409	24.4	2,020	9.9	2,033	6.3	1,977	5.8	8.4
	1975	(1st	10,434	20.1	2,998	17.2	13,891	10.5	14,051	7.0	13,662	5.1	7.5
		(2nd	6,418	19.3	2,318	19.1	9,531	10.8	9,674	7.2	9,437	5.5	8.7
	Total		18,709	19.9	5,737	18.6	25,711	10.6	26,029	7.0	25,341	5.3	8.0
<u>Tennessee</u>													
	1974	(1st	211	13.7	2,642	19.0	3,112	12.6	3,160	7.2	3,073	5.4	11.7
		(2nd	589	7.1	7,468	20.6	8,329	10.5	8,491	5.8	8,190	4.9	9.4
	1975	(1st	981	6.2	12,180	20.5	14,412	9.9	14,720	5.6	14,198	4.8	9.5
		(2nd	779	7.1	10,361	20.8	12,832	10.6	12,963	6.0	12,552	4.7	9.9
	Total		2,560	7.3	32,651	20.5	38,685	10.5	39,334	5.9	38,013	4.8	9.8
<u>Washington</u>													
	1974	(1st	1,650	8.5	7,923	11.5	10,737	12.8	10,703	5.6	10,632	3.5	13.6
		(2nd	559	8.9	4,752	10.3	6,575	11.8	6,585	6.2	6,524	3.6	12.1
	1975	(1st	903	8.5	5,937	10.9	8,409	12.6	8,413	6.3	8,325	3.1	11.2
		(2nd	474	9.3	4,377	11.2	6,451	11.3	6,444	6.1	6,388	3.3	10.5
	Total		3,586	8.7	22,989	11.0	32,172	12.2	32,145	6.0	31,869	3.4	12.0
<u>TOTAL</u>													
	1974	(1st	11,518	15.0	18,890	16.1	31,959	13.9	31,822	6.9	31,219	5.1	13.7
		(2nd	8,342	17.2	16,941	17.0	27,771	12.6	27,889	7.1	27,087	5.3	11.7
	1975	(1st	18,504	17.2	31,012	16.1	56,118	12.5	56,574	6.9	55,119	4.8	10.9
		(2nd	13,763	15.6	23,886	17.4	44,455	11.6	44,711	7.0	43,704	4.9	10.0
	Total		52,127	16.3	90,729	16.6	160,303	12.5	160,996	7.0	157,129	5.0	11.3

Nutrition Indices by Ethnic Group, January 1974 - December 1975  
Males Less than 18 Years of Age

ETHNIC GROUP	Date	Hemoglobin		Hematocrit		Height For Age		Weight For Age		Weight For Height		
		No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High
<b>Black</b>												
1974	(1st	1,057	19.8	1,406	21.3	2,423	15.8	2,396	8.9	2,350	6.0	12.0
	(2nd	1,173	19.6	1,188	23.7	2,624	14.4	2,630	8.7	2,569	4.9	11.1
1975	(1st	4,629	20.9	2,508	18.2	7,706	12.2	7,783	7.9	7,599	5.1	8.3
	(2nd	3,311	18.3	2,149	20.5	6,136	12.1	6,194	7.7	6,050	5.4	9.0
Total		10,170	19.8	7,251	20.4	18,889	12.9	19,003	8.1	18,568	5.3	9.4
<b>White</b>												
1974	(1st	3,356	12.6	5,742	16.8	10,022	13.8	9,963	7.0	9,826	5.4	12.8
	(2nd	1,935	13.9	5,689	18.3	8,756	12.2	8,821	7.2	8,613	6.1	10.7
1975	(1st	2,880	12.9	8,739	17.8	13,243	11.8	13,390	7.1	13,058	5.0	9.9
	(2nd	2,438	12.0	7,872	18.1	12,480	11.2	12,566	6.9	12,318	4.8	9.8
Total		10,609	12.0	28,042	17.8	44,501	12.2	44,740	7.0	43,842	5.3	10.7
<b>Sp. American</b>												
1974	(1st	943	18.1	999	15.5	1,943	17.4	1,955	8.2	1,898	5.4	17.4
	(2nd	828	23.1	854	13.1	1,612	18.5	1,600	9.3	1,536	6.6	17.2
1975	(1st	1,071	16.6	1,040	16.0	2,025	17.7	2,035	8.7	1,992	4.2	13.0
	(2nd	748	13.2	688	12.6	1,640	15.7	1,644	8.7	1,619	5.3	13.9
Total		3,590	17.8	3,581	14.5	7,220	17.3	7,234	8.7	7,045	5.3	15.3
<b>Am. Indian</b>												
1974	(1st	282	11.0	803	8.6	1,022	12.6	1,016	4.3	1,003	2.8	22.0
	(2nd	139	7.2	488	8.0	634	14.0	634	8.4	620	3.9	16.1
1975	(1st	232	8.6	2,457	11.4	3,863	18.1	3,817	8.5	3,722	4.7	17.9
	(2nd	232	13.4	691	14.8	1,395	17.3	1,368	10.5	1,354	6.2	13.0
Total		885	10.4	4,439	11.0	6,914	16.8	6,835	8.3	6,749	4.6	17.4
<b>Orient., Other &amp; Unknown</b>												
1974	(1st	204	9.3	564	9.8	764	16.6	765	10.3	750	6.4	14.3
	(2nd	109	6.4	334	8.4	443	12.4	448	7.4	439	3.7	9.8
1975	(1st	375	17.1	666	13.8	1,077	12.3	1,089	6.4	1,067	4.2	9.6
	(2nd	113	15.9	391	12.8	558	12.4	558	8.1	550	6.7	8.0
Total		801	13.5	1,955	11.5	2,842	13.5	2,860	7.9	2,806	5.2	10.6
<b>TOTAL</b>												
1974	(1st	5,842	14.6	9,514	16.2	16,174	14.6	16,095	7.4	15,827	5.4	13.8
	(2nd	4,184	17.0	8,553	17.6	14,069	13.4	14,133	7.8	13,777	5.7	11.7
1975	(1st	9,187	17.4	15,410	16.5	27,914	13.2	28,114	7.6	27,515	4.9	10.8
	(2nd	6,842	15.3	11,791	17.8	22,209	12.2	22,330	7.5	21,891	5.2	10.0
Total		26,055	16.2	45,268	17.0	80,366	13.2	80,672	7.6	79,010	5.2	11.3

Table 5b

NUTRITION INDICES BY ETHNIC GROUP, JANUARY 1974 - DECEMBER 1975  
Females Less than 18 Years of Age

ETHNIC GROUP	Date	Hemoglobin		Hematocrit		Height For Age		Weight For Age		Weight For Height		
		No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High
<b>Black</b>												
1974	(1st	1,063	19.9	1,469	21.3	2,472	13.3	2,453	6.8	2,405	5.3	13.8
	(2nd	1,218	17.8	1,241	20.1	2,712	12.2	2,711	7.3	2,623	5.4	11.9
1975	(1st	4,645	20.5	2,497	19.0	7,738	10.5	7,823	6.1	7,533	5.0	8.6
	(2nd	3,241	19.4	2,307	20.8	6,133	9.9	6,204	6.0	6,019	5.1	10.1
Total		10,167	19.8	7,514	20.2	19,055	10.9	19,191	6.3	18,580	5.1	10.2
<b>White</b>												
1974	(1st	3,101	13.3	5,520	15.9	9,591	12.9	9,535	6.5	9,349	5.4	12.4
	(2nd	1,838	16.5	5,481	16.8	8,364	10.9	8,430	6.0	8,183	4.9	10.3
1975	(1st	2,888	12.8	8,699	16.1	13,364	10.6	13,536	6.4	13,140	4.8	9.7
	(2nd	2,529	12.7	7,925	16.7	12,602	10.7	12,696	6.5	12,358	4.6	9.1
Total		10,356	13.6	27,625	16.4	43,925	11.2	44,197	6.4	43,030	4.9	10.2
<b>Sp. American</b>												
1974	(1st	1,019	19.5	1,003	18.3	1,979	15.2	1,997	6.6	1,930	4.0	15.8
	(2nd	853	20.5	822	14.2	1,636	16.3	1,616	8.2	1,528	5.8	17.0
1975	(1st	1,159	13.8	1,101	15.8	2,132	14.7	2,149	5.8	2,081	4.4	12.4
	(2nd	761	13.8	680	10.9	1,570	12.7	1,573	6.5	1,551	4.1	12.5
Total		3,792	16.8	3,606	15.2	7,317	14.8	7,335	6.7	7,090	4.5	14.3
<b>Am. Indian</b>												
1974	(1st	286	8.0	817	7.6	1,088	13.0	1,088	5.1	1,063	2.4	21.0
	(2nd	124	12.9	431	8.8	578	10.7	581	5.2	574	2.3	16.2
1975	(1st	217	7.4	2,466	10.5	3,882	17.5	3,856	6.1	3,784	3.9	20.7
	(2nd	271	11.1	728	13.0	1,434	14.5	1,397	7.1	1,382	4.6	14.3
Total		898	9.5	4,442	10.2	6,982	15.6	6,922	6.1	6,803	3.7	19.1
<b>Orient., Other &amp; Unknown</b>												
1974	(1st	196	14.3	489	8.8	655	11.8	654	6.6	645	3.1	9.3
	(2nd	112	8.9	335	9.3	412	10.4	418	5.3	402	2.5	10.0
1975	(1st	375	19.7	668	14.4	1,088	11.3	1,096	4.6	1,066	4.1	10.2
	(2nd	102	20.6	346	13.0	507	14.0	511	8.8	503	2.8	8.0
Total		785	16.9	1,838	11.7	2,662	11.8	2,679	6.0	2,616	3.4	9.5
<b>TOTAL</b>												
1974	(1st	5,665	15.4	9,298	15.9	15,785	13.2	15,727	6.5	15,392	4.9	13.5
	(2nd	4,145	17.3	8,310	16.4	13,702	11.8	13,756	6.4	13,310	4.9	11.6
1975	(1st	9,284	17.0	15,431	15.6	28,204	11.9	28,460	6.1	27,604	4.6	11.1
	(2nd	6,904	16.0	11,986	16.9	22,246	11.0	22,381	6.4	21,813	4.7	9.9
Total		25,998	16.4	45,025	16.2	79,937	11.9	80,324	6.3	78,119	4.7	11.3

NUTRITION INDICES BY AGE, JANUARY 1974 - DECEMBER 1975  
Males Less than 18 Years of Age

AGE GROUP	Date	Hemoglobin		Hematocrit		Height For Age		Weight For Age		Weight For Height			
		No.	%	No.	%	No.	%	No.	%	No.	%	%	
		Exam.	Low	Exam.	Low	Exam.	Low	Exam.	Low	Exam.	Low	High	
<u>&lt;1</u>	1974	(1st	772	10.4	1,518	9.4	4,934	17.5	4,883	9.3	4,747	6.6	14.7
		(2nd	406	11.6	929	7.4	4,482	16.1	4,504	9.7	4,309	7.2	13.3
	1975	(1st	734	13.2	2,004	9.0	8,173	16.9	8,250	10.0	7,875	5.8	11.8
		(2nd	661	10.3	1,332	9.3	7,262	15.9	7,322	10.1	7,054	6.0	12.2
	Total		2,573	11.3	5,783	8.9	24,851	16.6	24,959	9.8	23,985	6.3	12.8
<u>1</u>	1974	(1st	1,283	13.4	2,362	9.9	3,128	16.2	3,117	7.3	3,068	5.9	19.2
		(2nd	644	18.0	1,563	10.2	1,794	16.8	1,840	7.8	1,774	6.5	18.3
	1975	(1st	1,193	15.6	3,068	9.5	3,818	15.9	3,880	7.8	3,800	5.8	18.3
		(2nd	983	12.9	1,832	10.0	2,465	15.1	2,504	7.0	2,450	5.8	15.9
	Total		4,103	14.7	8,825	9.9	11,205	16.0	11,341	7.5	11,092	5.9	18.0
<u>2-5</u>	1974	(1st	2,568	17.1	4,528	20.5	6,019	13.4	6,007	6.2	5,943	4.0	12.6
		(2nd	1,595	16.0	3,731	18.0	4,364	12.5	4,369	6.3	4,307	4.2	10.9
	1975	(1st	2,580	15.1	6,382	18.4	7,977	12.2	8,020	5.3	7,953	3.7	10.9
		(2nd	2,154	14.3	4,614	18.6	5,978	10.8	6,002	5.3	5,940	4.2	8.9
	Total		8,897	15.7	19,255	18.9	24,338	12.2	24,398	5.7	24,143	4.0	10.8
<u>6-9</u>	1974	(1st	497	19.1	550	29.6	875	9.0	871	5.3	867	5.1	7.4
		(2nd	550	25.1	924	33.9	1,224	9.0	1,214	5.4	1,213	7.0	6.8
	1975	(1st	1,512	23.7	1,670	29.0	2,822	6.9	2,825	4.4	2,816	4.8	5.5
		(2nd	1,057	22.2	1,904	30.7	2,659	6.5	2,652	4.9	2,641	5.2	6.2
	Total		3,616	22.8	5,048	30.6	7,580	7.4	7,562	4.8	7,537	5.3	6.2
<u>10-12</u>	1974	(1st	300	10.7	285	17.2	544	7.9	545	7.0	540	7.2	5.6
		(2nd	405	16.0	691	26.9	1,004	8.6	1,003	7.6	997	4.6	7.5
	1975	(1st	1,356	19.0	1,072	20.9	2,238	8.6	2,249	7.1	2,232	5.4	5.7
		(2nd	844	16.8	971	19.8	1,686	8.4	1,684	7.8	1,675	6.4	6.9
	Total		2,905	17.1	3,019	21.6	5,472	8.5	5,481	7.4	5,444	5.8	6.4
<u>13-17</u>	1974	(1st	422	8.1	271	10.7	674	8.8	672	8.8	662	4.5	7.6
		(2nd	584	15.4	715	14.3	1,201	10.3	1,203	8.2	1,177	4.2	7.1
	1975	(1st	1,812	17.4	1,214	16.2	2,886	12.0	2,890	10.1	2,839	4.3	6.4
		(2nd	1,143	14.6	1,138	14.2	2,159	10.6	2,166	8.9	2,131	3.6	6.2
	Total		3,961	15.3	3,338	14.7	6,920	11.0	6,931	9.3	6,809	4.1	6.6
<u>TOTAL</u>	1974	(1st	5,842	14.6	9,514	16.2	16,174	14.6	16,095	7.4	15,827	5.4	13.8
		(2nd	4,184	17.0	8,553	17.6	14,069	13.4	14,133	7.8	13,777	5.7	11.7
	1975	(1st	9,187	17.4	15,410	16.5	27,914	13.2	28,114	7.6	27,515	4.9	10.8
		(2nd	6,842	15.3	11,791	17.8	22,209	12.2	22,330	7.5	21,891	5.2	10.0
	Total		26,055	16.2	45,268	17.0	80,366	13.2	80,672	7.6	79,010	5.2	11.3

NUTRITION INDICES BY AGE, JANUARY 1974 - DECEMBER 1975  
Females Less than 18 Years of Age

AGE GROUP	Date	Hemoglobin		Hematocrit		Height For Age		Weight For Age		Weight For Height			
		No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High	
<u>&lt;1</u>	1974	(1st	773	9.6	1,488	9.8	4,803	14.2	4,777	7.8	4,613	6.9	15.0
		(2nd	405	10.4	970	8.6	4,450	12.7	4,468	7.3	4,231	6.6	14.3
	1975	(1st	743	10.4	1,915	9.5	8,223	14.0	8,326	7.2	7,872	5.6	13.4
		(2nd	693	8.8	1,276	8.4	7,108	13.0	7,152	7.2	6,853	4.8	13.1
	Total	2,614	9.7	5,649	9.2	24,584	13.5	24,723	7.3	23,569	5.8	13.8	
<u>1</u>	1974	(1st	1,193	12.9	2,195	10.2	2,939	17.7	2,929	6.6	2,882	4.8	19.7
		(2nd	630	13.5	1,476	8.9	1,750	14.7	1,778	5.8	1,737	3.9	16.5
	1975	(1st	1,108	12.3	2,864	8.6	3,585	16.8	3,666	5.9	3,566	4.4	17.8
		(2nd	916	13.8	1,762	10.4	2,355	16.4	2,387	6.8	2,338	4.6	13.8
	Total	3,847	13.0	8,297	9.5	10,629	16.6	10,760	6.3	10,523	4.5	17.2	
<u>2-5</u>	1974	(1st	2,489	17.3	4,428	18.6	5,925	12.2	5,898	5.3	5,844	2.9	11.2
		(2nd	1,516	17.3	3,616	17.6	4,242	11.7	4,230	5.0	4,170	3.8	10.4
	1975	(1st	2,540	14.1	6,183	15.8	7,832	11.8	7,879	4.9	7,801	3.2	11.0
		(2nd	2,162	15.0	4,590	16.9	5,939	10.5	5,976	5.3	5,915	3.4	8.1
	Total	8,707	15.8	18,817	17.1	23,938	11.6	23,983	5.1	23,730	3.3	10.2	
<u>6-9</u>	1974	(1st	466	22.1	531	31.6	843	6.9	844	4.5	834	7.0	7.0
		(2nd	580	27.8	837	32.1	1,154	7.9	1,157	5.7	1,144	5.1	5.0
	1975	(1st	1,515	22.1	1,728	30.2	2,873	6.3	2,874	4.3	2,865	5.9	5.1
		(2nd	1,058	21.9	1,873	29.2	2,668	5.6	2,669	5.1	2,652	7.0	5.6
	Total	3,619	23.0	4,969	30.3	7,538	6.4	7,544	4.8	7,495	6.3	5.5	
<u>10-12</u>	1974	(1st	248	13.7	278	18.0	483	8.9	485	10.3	477	9.0	5.2
		(2nd	368	18.8	620	20.0	857	9.0	859	9.3	846	7.0	6.6
	1975	(1st	1,387	18.7	1,212	18.3	2,389	8.5	2,398	8.0	2,369	7.4	5.2
		(2nd	813	15.0	1,132	18.6	1,783	7.9	1,789	7.4	1,767	7.1	6.0
	Total	2,816	17.2	3,242	18.7	5,512	8.4	5,531	8.2	5,459	7.4	5.7	
<u>13-17</u>	1974	(1st	496	15.5	378	17.7	792	7.8	794	5.8	742	3.9	11.1
		(2nd	646	15.2	791	14.4	1,249	10.4	1,264	7.7	1,182	3.0	9.4
	1975	(1st	1,991	20.5	1,529	16.2	3,302	8.7	3,317	6.9	3,131	3.0	8.1
		(2nd	1,262	19.0	1,353	14.8	2,393	9.1	2,408	7.4	2,288	3.2	9.4
	Total	4,395	18.7	4,051	15.5	7,736	9.0	7,783	7.1	7,343	3.2	9.0	
<u>TOTAL</u>	1974	(1st	5,665	15.4	9,298	15.9	15,785	13.2	15,727	6.5	15,392	4.9	13.5
		(2nd	4,145	17.3	8,310	16.4	13,702	11.8	13,756	6.4	13,310	4.9	11.6
	1975	(1st	9,284	17.0	15,431	15.6	28,204	11.9	28,460	6.1	27,604	4.6	11.1
		(2nd	6,904	16.0	11,986	16.9	22,246	11.0	22,381	6.4	21,813	4.7	9.9
	Total	25,998	16.4	45,025	16.2	79,937	11.9	80,324	6.3	78,119	4.7	11.3	

## CRITERIA FOR IDENTIFYING INDIVIDUALS WITH LOW OR HIGH VALUES

1. Low Hemoglobin and Low Hematocrit: Hemoglobin or hematocrit below the level specified in the following table for appropriate age and sex.

<u>Age</u>	<u>Hgb.</u>	<u>Hct.</u>
6-23 months	10 grams	31%
2-5 years	11 grams	34%
6-14 years	12 grams	37%
15 or more years (females)	12 grams	37%
15 or more years (males)	13 grams	40%

2. Low Height for Age: Height for age less than the 5th percentile of a person of the same sex and age in the reference population.
3. Low Weight for Age: Weight for age less than the 5th percentile of a person of the same sex and age in the reference population.
4. Low Weight for Height: Weight for height less than the 5th percentile of a person of the same sex and height in the reference population.
5. High Weight for Height: Weight for height greater than the 95th percentile of a person of the same sex and height in the reference population.

Reference Population: Smoothed distribution of percentiles of the following populations:

<u>Age</u>	<u>Reference Population Data</u>
Birth - 24 months	Fels Research Institute Growth Study
25 - 59 months	Preschool Nutrition Survey
60 - 143 months	National Health Examination Survey, Cycle II
144 - 215 months	National Health Examination Survey, Cycle III

Note: Growth percentiles represent heights and weights which have been standardized for sex and age, and sex and height (for weight for height). Therefore height and weight comparisons may be made between groups of individuals using percentiles without being concerned about the age and sex distributions of groups being compared. However, comparisons of height and weight among groups with persons of diverse ethnic origins should be made with care because of possible genetic differences in growth potential. Differences observed between groups may be due to differences in nutritional status of the individuals or in possible differences in the ethnic makeup of the groups.

# SPECIAL REPORTS

## MONTANA NUTRITION SURVEILLANCE

For the first time, data are presented on children from Montana. The data were provided by the State WIC Program and are not, therefore, representative of children in Montana. These children appear to have a very high prevalence of low hematocrit values. Follow-up investigation by State health staff showed the low values to be caused largely by measurement inaccuracies. A future issue of Nutrition Surveillance will describe this investigation and discuss the findings.

In comparison with the usual values from other States, there is a low prevalence of low height-for-age and high weight-for-height, and a somewhat high prevalence of low weight-for-height. Their prevalence of low weight-for-age is at the usual level.

Table 1

### Nutrition Indices for Montana, 1975 Persons Less than 18 Years of Age

State	Hemoglobin		Hematocrit		Height For Age		Weight For Age		Weight For Height		
	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High
Montana	-	-	903	36.9	1,277	8.2	1,272	7.3	1,256	7.0	8.6

Nutrition Indices for Montana by Sex and Ethnic Group, 1975  
Persons Less than 18 Years of Age

Sex and Ethnic Group	Hemoglobin		Hematocrit		Height For Age		Weight For Age		Weight For Height		
	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High
Male											
Black	-	-	5	80.0	6	16.7	6	0.0	6	0.0	33.3
White	-	-	326	35.6	469	7.5	468	8.1	463	7.6	7.1
Sp. American	-	-	67	43.3	89	11.2	89	9.0	89	6.7	6.7
Am. Indian	-	-	90	41.1	113	8.8	113	6.2	112	7.1	10.7
Oriental	-	-	1	0.0	1	0.0	1	0.0	1	0.0	0.0
Other	-	-	5	40.0	5	0.0	5	20.0	5	20.0	0.0
Unknown	-	-	1	100.0	1	0.0	1	0.0	1	0.0	100.0
Total	-	-	495	38.2	684	8.2	683	7.9	677	7.4	8.0
Female											
Black	-	-	1	0.0	1	0.0	1	0.0	1	0.0	0.0
White	-	-	291	34.4	428	10.0	428	7.2	421	7.8	10.0
Sp. American	-	-	53	34.0	71	4.2	70	7.1	68	5.9	8.8
Am. Indian	-	-	61	41.0	90	2.2	87	2.3	87	1.1	6.9
Oriental	-	-	0	-	1	100.0	1	100.0	0	-	-
Other	-	-	2	50.0	2	0.0	2	0.0	2	0.0	0.0
Unknown	-	-	0	-	0	-	0	-	0	-	-
Total	-	-	408	35.3	593	8.3	589	6.6	579	6.6	9.3

Table 3

Nutrition Indices for Montana by Sex and Age, 1975  
Persons Less than 18 Years of Age

Sex and Age Group	Hemoglobin		Hematocrit		Height For Age		Weight For Age		Weight For Height		
	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High
Male											
<1	-	-	97	24.7	271	11.4	270	9.6	265	4.5	12.5
1	-	-	132	28.8	139	11.5	139	10.1	138	10.1	9.4
2-5	-	-	266	47.7	274	3.3	274	5.1	274	8.8	2.9
6-9	-	-	0	-	0	-	0	-	0	-	-
10-12	-	-	0	-	0	-	0	-	0	-	-
13-17	-	-	0	-	0	-	0	-	0	-	-
Total	-	-	495	38.2	684	8.2	683	7.9	677	7.4	8.0
Female											
<1	-	-	81	25.9	253	9.1	251	5.6	242	3.7	14.9
1	-	-	120	23.3	125	12.0	125	9.6	125	11.2	8.0
2-5	-	-	207	45.9	215	5.1	213	6.1	212	7.1	3.8
6-9	-	-	0	-	0	-	0	-	0	-	-
10-12	-	-	0	-	0	-	0	-	0	-	-
13-17	-	-	0	-	0	-	0	-	0	-	-
Total	-	-	408	35.3	593	8.3	589	6.6	579	6.6	9.3

# NEPAL NUTRITION STATUS SURVEY

## Introduction

Nepal is a mountainous country in Asia of approximately 140,000 square kilometers and with a population of 11.3 million people. In 1975 the Center for Disease Control and the United States Agency for International Development assisted the Government of Nepal in implementing a simplified field assessment of the nutritional status of Nepalese children. The objectives of the 1975 Nepal Nutrition Status Survey were to provide for the rural population valid data on the extent and distribution of protein-calorie undernutrition and the prevalence of low hemoglobin levels in the 6 to 71 month age group. These data would aid the Nepal Government in deciding upon the types and locations for remedial nutrition programs.

## Methodology

Selected anthropometric measurements, adequate sampling, and careful training are the core of the survey methodology.

The sample was composed of 6,501 children 6 to 71 months of age living in 419 selected villages throughout the entire country. Height and weight measurements and age information was obtained on each survey child. A fingerstick blood was collected on approximately 20 percent of the population and the hemoglobin values determined in Kathmandu. After intensive training, eight teams of two workers completed the field collection of survey data in 3 months using 4-wheel-drive vehicles, helicopters, as well as going on foot.

## Results

Figure I represents Nepal and shows the distribution of survey villages.

Table 1 shows the distribution of the survey children and the urban "special group" by percentage of the National Academy of Sciences (NAS) reference median weight-for-height. A weight-for-height value below 80 percent of the NAS median is an indicator of acute undernutrition. The urban "special group" characterizes the nutritionally advantaged Kathmandu children for purposes of comparison. Acute undernutrition does not appear to be a major problem in rural Nepal children.

Table 2 shows the distribution of the survey children and the urban "special group" by percentage of the NAS reference median height-for-age. A height-for-age value below 90 percent of the NAS median is an indicator of chronic undernutrition. Fifty-two percent of the rural Nepal children measured were chronically undernourished; that is, short for their age. Children in the "special group" demonstrate considerably less chronic undernutrition, and their values may represent the linear growth potential of reasonably well-nourished Nepalese children.

The age-specific prevalence rates in Table 3 demonstrate progressive chronic undernutrition; that is, there are increasing numbers of children who are short for their age in progressively older age groups, suggesting that those children initially short-for-age remain permanently retarded in linear growth, and, with each succeeding year, those who chronically fail to attain adequate nourishment also slip into the short-for-age category.

Table 4 presents the mean and standard deviation for hemoglobin values by age corrected for altitude. The percent of children with low hemoglobin values increases up to 24 months and then decreases in progressively older age groups.

### Conclusions

Chronic undernutrition identified by short-for-age findings in rural Nepal children is a significant problem. Findings for the "special group" represent an attainable nutrition status for all Nepal children.

Acute undernutrition as measured by the weight-for-height criterion is not a very important problem in Nepal.

The causes of the levels of chronic undernutrition were not looked for in this survey. Cause and effect information cannot be determined by cross-sectional investigations. Further nutritional and related information reflecting the contributions of geography/climate, agriculture, food habits, health care, etc., to cause such levels of chronic undernutrition needs to be collected, utilizing an on-going surveillance system. Decisions on intervention programs should combine the information obtained by surveillance with the interest and capability of the government. The effectiveness of an intervention program is measurable by a survey as herein described.



Table 1

NAS Weight-for-Height Percent of Median  
Percentage Distribution of 6,501 Survey Children<sup>a</sup>

Geopolitical Division	Percent of Median Weight-for-Height <sup>b</sup>							Total Percent
	<75	75-79	80-84	85-89	90-94	95-99	100+	
<u>Total Rural Nepal</u>	1.7	5.0	14.9	24.4	24.7	16.7	12.6	100.0
<u>Development Regions</u>								
Far West	2.4	4.7	15.6	24.0	26.2	16.6	10.5	100.0
West	1.3	4.4	12.8	23.7	24.9	16.5	16.4	100.0
Central	1.7	6.0	16.2	24.2	25.7	15.0	11.2	100.0
East	1.5	4.4	14.5	25.8	22.2	19.1	12.5	100.0
<u>Terrain</u>								
Hill	1.7	4.1	13.2	22.9	25.4	18.2	14.5	100.0
Terai	2.0	6.7	17.1	27.5	23.3	14.4	9.0	100.0
<u>Special Group</u>	1.0	1.0	5.0	17.0	27.0	22.0	27.0	100.0

<sup>a</sup>Percents based on weighted data.

<sup>b</sup>Values less than 40.0 or greater than 149.9 were excluded from tabulations.

Table 2

NAS Height-for-Age Percent of Median  
Percentage Distribution of 6,508 Survey Children<sup>a</sup>

Geopolitical Division	Percent of Median Height-for-Age <sup>b</sup>								Total Percent
	<80.0	80.0-82.4	82.5-84.9	85.0-87.4	87.5-89.9	90.0-92.4	92.5-94.9	95+	
<u>Total Rural Nepal</u>	3.4	4.3	9.3	15.1	19.9	18.6	15.3	14.1	100.0
<u>Development Regions</u>									
Far West	4.1	3.8	9.6	17.0	21.2	16.6	14.7	13.0	100.0
West	4.2	4.6	10.5	15.5	20.5	18.2	13.8	12.7	100.0
Central	2.4	4.5	8.6	14.7	19.6	20.4	16.1	13.7	100.0
East	3.5	4.3	8.7	13.4	18.7	18.4	16.1	16.9	100.0
<u>Terrain</u>									
Hill	3.9	4.5	10.6	16.4	20.4	18.9	14.0	11.3	100.0
Terai	2.6	4.0	6.9	12.7	19.1	18.9	17.2	18.6	100.0
<u>Special Group</u>	-	-	1.0	5.0	12.0	17.0	24.0	40.0	100.0

<sup>a</sup>Percents based on weighted data.

<sup>b</sup>Values less than 60.0 or greater than 199.9 were excluded from tabulations.

Table 3

Percentage of Nepal Survey Population and "Special Group"  
by Specific Age Groups with Chronic Undernutrition<sup>a</sup>

Age Groups in Months	Short-for-Age <sup>a</sup> (Percentage)	
	NSP <sup>b</sup>	(SP) <sup>c</sup>
6 - 11	21.0	(17) <sup>d</sup>
12 - 23	39.1	(11)
24 - 35	46.8	(13)
36 - 47	56.2	(14)
48 - 59	61.4	(24)
60 - 71	54.2	(25)
Total (6 - 71)	48.3	(18)

<sup>a</sup>Chronic undernutrition (short-for-age) is defined as height-for-age less than 90 percent of NAS reference median.

<sup>b</sup>NSP = Nepal Survey Population

<sup>c</sup>SP = "Special Group"

<sup>d</sup>Percentage is based on less than 50 cases and does not meet standards of reliability.

Table 4

Mean Hemoglobin Values (Corrected for Altitude) for Rural Nepal  
and Percent below Normal by Age

Age in Months	Total Country		Number of Hemoglobin Determinations	Percent with Hemoglobin Values	
	Mean Hemoglobin (Grams/100cc)	(S.D.) <sup>a</sup>		<10gms/100cc	10.0-10.9gms/100cc
6-11	11.0	(±1.5)	95	19	30
12-23	11.2	(±1.7)	223	20	21
24-35	11.4	(±1.7)	190	17	22
36-47	11.7	(±1.7)	241	9	16
48-59	12.0	(±1.9)	238	9	14
60-71	12.1	(±1.7)	266	6	13
<u>6-71</u>	11.7	(±1.7)	1,253	12	18

<sup>a</sup>Standard deviation of weighted data

## COMPARISON OF PHYSICAL SIZE OF CANADIAN AND AMERICAN CHILDREN

In Figures I-IV the distributions of height-for-age and weight-for-age, reported in Nutrition Canada, are compared with those of the NCHS reference population for boys and girls from 2 to 18 years of age. (Children less than 24 months of age were not reported in Nutrition Canada.) For each population the 5th, 50th, and 95th centile curves are shown. Nutrition Canada curves are plotted at actual observed values for each age, while those of the NCHS reference population have been mathematically smoothed.

In height-for-age, below about 120 months, little difference is seen between the two sets of curves except that the 5th centile for girls of Nutrition Canada is somewhat lower. Above 120 months the 5th centile curves for girls are nearly identical. For the two upper centiles, and for all three centiles for boys, Nutrition Canada curves are somewhat lower.

In weight-for-age little consistent difference is seen between the two sets of curves below about 140 months. Above this age for both indices, Nutrition Canada values for all three curves are generally lower.

In summary, older boys and girls from a Canadian national probability sample appear to be somewhat shorter and less heavy for their age than older boys and girls from a U.S. national probability sample. Little difference is seen in either height or weight in the younger children. Weight-for-height data for Canadian children have not been published.

AGE IN MONTHS

24.00 60.00 96.00 132.00 168.00 204.00

BOYS HT/AGE CENTILES

— NAS REFERENCE  
 - - - NUTRITION CANADA, 1970-72

95TH

50TH

5TH

HEIGHT IN CM

HEIGHT IN CM

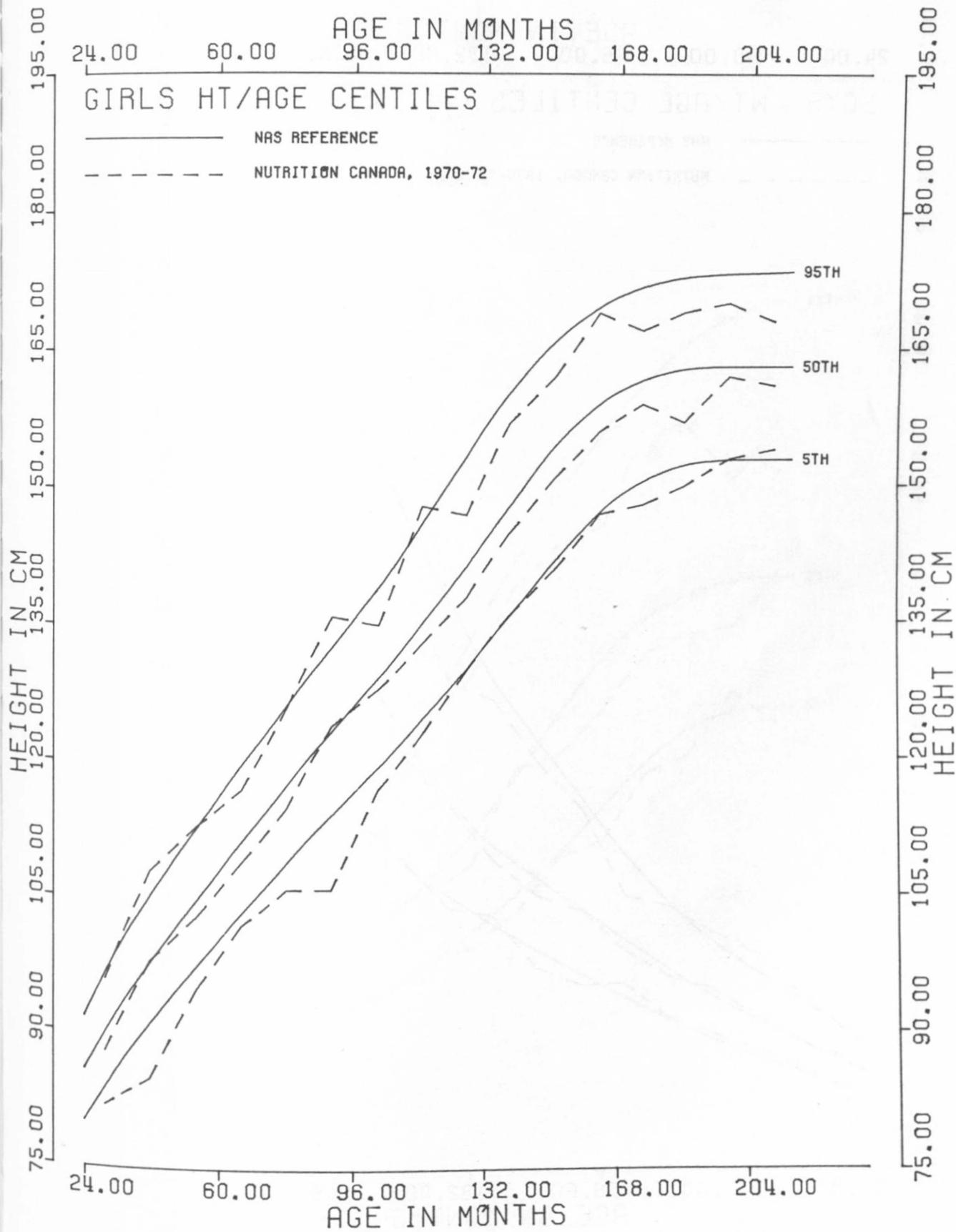
195.00  
180.00  
165.00  
150.00  
135.00  
120.00  
105.00  
90.00  
75.00

195.00  
180.00  
165.00  
150.00  
135.00  
120.00  
105.00  
90.00  
75.00

24.00 60.00 96.00 132.00 168.00 204.00

AGE IN MONTHS

FIGURE II



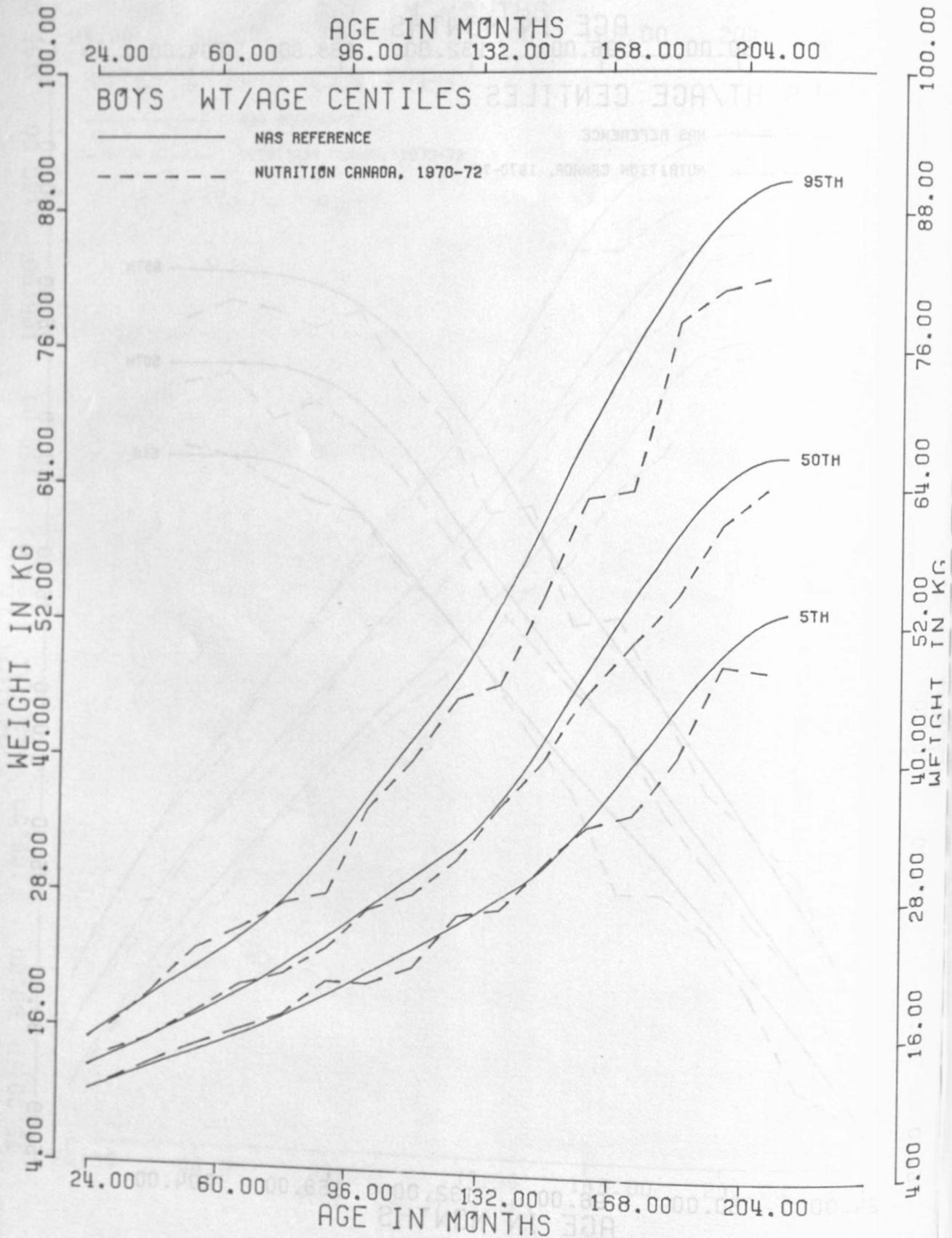


FIGURE IV

